



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
[www.uspto.gov](http://www.uspto.gov)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/833,666	04/13/2001	Massimo Brioschi	Q64029	1733
23373	7590	11/01/2006	EXAMINER	
SUGHRUE MION, PLLC 2100 PENNSYLVANIA AVENUE, N.W. SUITE 800 WASHINGTON, DC 20037				CHANG, RICHARD
		ART UNIT		PAPER NUMBER
		2616		

DATE MAILED: 11/01/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	09/833,666	BRIOSCHI ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Richard Chang	2663	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

1)  Responsive to communication(s) filed on 18 April 2006.

2a)  This action is **FINAL**.                    2b)  This action is non-final.

3)  Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

4)  Claim(s) 1-11 is/are pending in the application.  
4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.

5)  Claim(s) \_\_\_\_\_ is/are allowed.

6)  Claim(s) 1,4 and 7-9 is/are rejected.

7)  Claim(s) 2,3,5,6,10 and 11 is/are objected to.

8)  Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

9)  The specification is objected to by the Examiner.

10)  The drawing(s) filed on 13 April 2001 is/are: a)  accepted or b)  objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)  The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)  Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a)  All    b)  Some \* c)  None of:  
1.  Certified copies of the priority documents have been received.  
2.  Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3.  Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1)  Notice of References Cited (PTO-892)  
2)  Notice of Draftsperson's Patent Drawing Review (PTO-948)  
3)  Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_

4)  Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_ .  
5)  Notice of Informal Patent Application (PTO-152)  
6)  Other: \_\_\_\_\_

## DETAILED ACTION

### *Response to Arguments*

1. Applicant's arguments filed 04/18/2006 have been fully considered but they are not persuasive.

-- In response to applicant's argument that the cited reference does not disclose that if the digital delays in the phase shifter will themselves be integer multiples of the sampling period as cited in claims 1 and 4 (See Applicant ' Amendment A, page 2, 3rd paragraph), the reference clearly discloses that the analog signals are digitized (sampled by the sampling period) by the A/D converter (226, 246) first into the digital domain and processed as digital baseband signal, then passed to the 90 degree phase shifter (230,252) in the digital domain (See Fig. 1, Col. 2, lines 8-34) , i.e., the 90 degree phase shift is achieved using taps of digital delays in integer multiples of the sampling period as fundamental digital domain signal processing.

--In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., in the system of the present invention, the signals are passed through a **variable** delay between the A/D converter and the equalizer, where 'a period equal to an integer multiple of the sampling period' is not equal to '**variable** delay') are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification,

limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

It is the examiner's position that the limitation of "if the digital delays in the phase shifter will themselves be integer multiples of the sampling period" as cited in claims 1 and 4 are clearly anticipated by the cited reference for the reason discussed above.

### ***Claim Rejections - 35 USC § 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1,4, and 7-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over US patent No. 6,115,419 ("Meehan") in view of US patent 6,353,629 ("Pal").

Regarding claims 1, 4 and 9. Meehan teaches an apparatus and method for improving signal reception from the multipath delay related to antenna locations (compensating for a possible delay ... paths in space diversity radio transmissions) (See Fig. 1) comprising the steps of

receiving first analog baseband signal from IF mixer (224) for the first antenna (220) path (See Fig. 1, Col 4, lines 19-22),

receiving second analog baseband signal from IF mixer (244) for the second antenna (240) path (See Fig. 1, Col 4, lines 43-45),

sampling the first analog baseband signal by an analog-to-digital converter (226) (See Fig. 1, Col 4, lines 24-25) and the second analog baseband signal by an analog-to-digital converter (246) (See Fig. 1, Col 4, lines 48-49) to obtain a first digital signal and a second digital signal, respectively, a possible delay being present between the first and the second digital signals and

sending the first digital signal to equalizer (228) (See Fig. 1, Col 4, lines 24-25) and the second digital signal to equalizer (248) (See Fig. 1, Col 4, lines 48-49) wherein said method further comprises the step of

delaying the first digital signal by passing through phase shifter (230) and a second feed-forward equalizer (232) with inherent multiple delay taps based on the sampling period (See Fig. 1, Col 4, lines 26-32) (see the reason above),

modifying the signal to create an improved signal (recovering the difference between the imposed delay and the real one) by the decision device (330), at the equalization step (300) (See Fig. 1, Col 7, lines 28-32).

Meehan teaches substantially all the claimed invention but did not disclose expressly the particular application involving limitations of

"delay in a digital manner either said first digital signal or said at least one second digital signal".

Pal teaches a software executable method and system for similar poly-path time domain equalization wherein the recovery of real delay offset may be achieved either by delaying both digital signal or by delaying only in one digital signal (304) (See Fig. 3 and Fig. 6, Col. 8, lines 1-22).

A person of ordinary skill in the art would have been motivated to employ Pal in Meehan in order to obtain an apparatus and method for compensating for a possible delay due to multipaths in space diversity radio transmissions and to take advantage of delaying only in one digital signal to recover real delay offset during equalization in claims 1,4 and 9.

The suggestion/motivation to do so would have been to delay only in one digital signal to recover real delay offset during equalization (conceivably just as set one digital path delay tap length to zero in Meehan's teaching), as suggested by Pal in Col. 8, lines 1-22. At the time the invention was made, therefore, it would have been obvious to one of ordinary skill in the art to which the invention pertains to combine Pal with the Meehan to obtain the inventions specified in claims 1,4 and 9.

Regarding claims 7-8, as discussed above, these claims have limitations that is similar to those of claim 1 and Pal further teaches that a computer readable media would include computer readable program code for performing the operations of the methods (See Col. 5, lines 35-38), thus it is rejected with the same rationale applied against claims 1 above.

#### ***Allowable Subject Matter***

4. Claims 2-3, 5-8 and 10-11 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims and if no art rejection can be applied.

***Conclusion***

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Richard Chang whose telephone number is (571) 272-3129. The examiner can normally be reached on Monday - Friday from 8 AM to 5 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ricky Ngo can be reached on (571) 272-3139. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

*Ron*

rkc

Richard Chang  
Patent Examiner  
Art Unit 2616

*Ricky Q. Ngo*  
RICKY Q. NGO  
SUPERVISORY PATENT EXAMINER